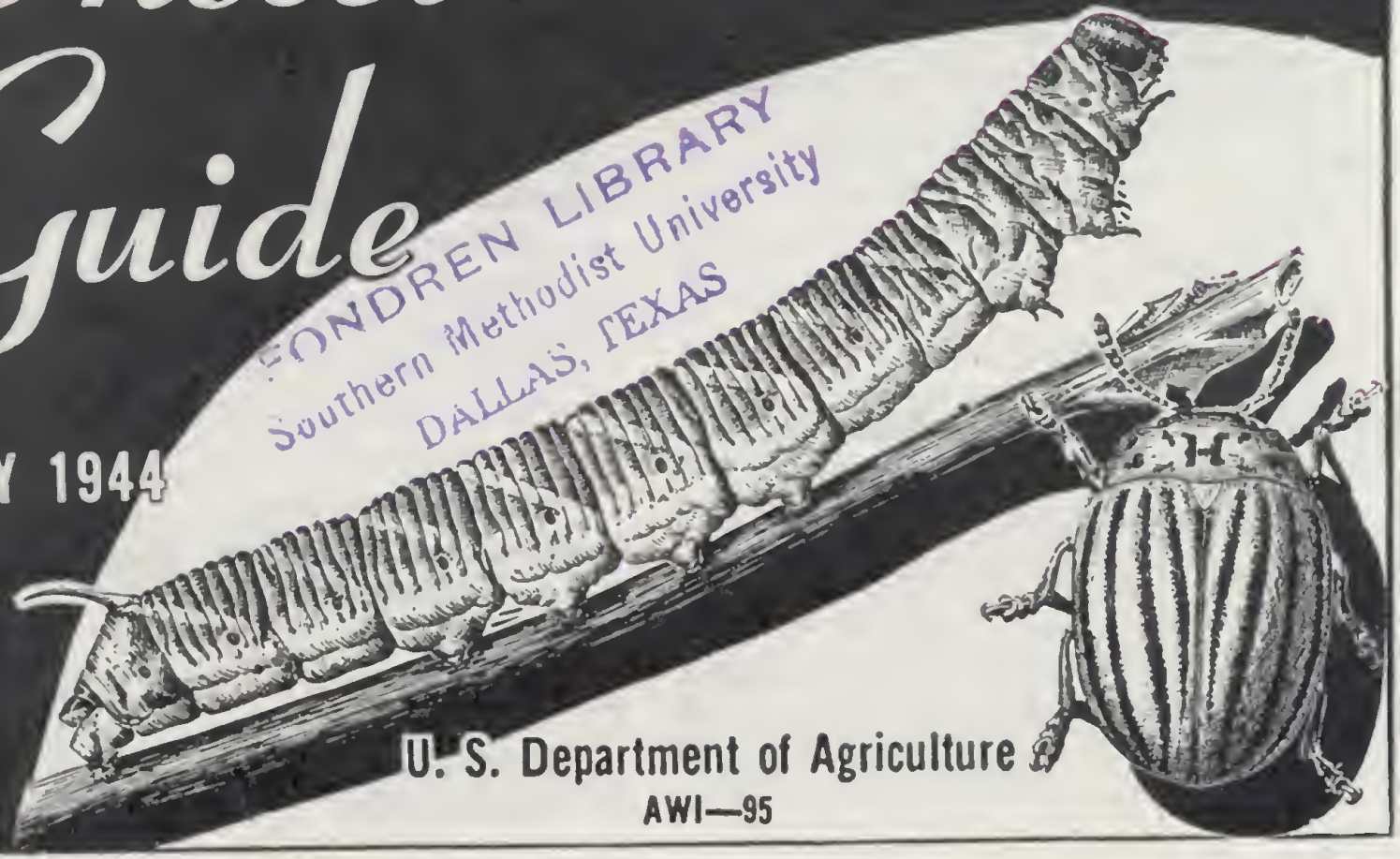
VICTORY GARDEN

Insect Guide

MAY 1944



U. S. Department of Agriculture
AWI—95

Crops and Pests

INSECTS IN THE VICTORY GARDEN

Now, in time of war, the need for maximum production of food is more important than ever before. Our Government is asking urban as well as rural people to contribute their share again this year in meeting our huge food requirements. They can do this by growing Victory Gardens to supply their home needs for vegetables, thus releasing food produced from other sources to feed our fighters, our allies, and our workers on the home front.

Twenty-two million Victory Gardens is the goal set for 1944. This means that we need about 16 million city, town, and suburban gardens.

Insects that feed on garden crops must be controlled. In this guide the gardener will find a general discussion of insects and their control. Insects having the same or similar habits are listed together, and methods for combating them are given. No attempt is made to discuss each insect separately, or to give as wide a variety of control measures as commercial growers would need.

A knowledge of insects and their food habits will be useful in applying control measures and will also lessen the sometimes groundless fear of damage they may cause. For example, many insects that will not cause crop damage will be found in the garden, their presence being merely incidental.

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On the other hand, some insects, such as blister beetles, grasshoppers, and cutworms, feed on a wide variety of plants. Others, such as cabbage worms (caterpillars) and harlequin bugs, feed on closely related crops like cabbage, collards, kale, and broccoli. The Mexican bean beetle feeds only on beans, the striped cucumber beetle on squash and other members of the squash family, such as pumpkins and melons.

Insects feed on plants by chewing holes in the leaves, sucking plant juices, or tunneling into the roots, stems, or leaves. The presence of the chewers is easy to detect; the injury caused by the other kinds shows up as wilting, curling, or stunting of the different parts of the plants.

Some insects are beneficial, because they feed on other insects that are pests. Some of the beneficial insects are ladybeetles, wasps, syrphid flies, and lacewings.

CUTWORMS attack the young plants of cabbage, collards, tomatoes, corn, and almost all other garden plants. They cut these plants off at the surface of the ground. These insects are likely to be present in soil that was in grass and weeds the year before. Newly set plants should be protected by collars at the time of planting. The collars should be made of paper and should be about the size and weight of a 1-cent post card. Wrap the paper around the plant as illustrated. Leave ample space for air to circulate between the collar and the plant, and allow the collar to extend into the soil about 1 inch. Cutworms will crawl from plant to plant, and each worm may cut off several plants. For this reason, any cutworms found should be killed. A pinch of poisoned bait placed at the base of each plant will prevent further damage. Also, a poison bait scattered thinly on the ground just before the plants are set will attract the cutworms, and the small amount of bait they eat will kill them.

For making and applying bait, see discussion of grasshoppers (p. 12).

PLANT MAGGOTS destroy roots of cabbages, kale, radishes, and broccoli. Other kinds feed on sprouting beans, corn, and peas. Plants such as cabbage on whose roots maggots are feeding appear stunted, and their leaves turn bluish green. These insects cannot be controlled after plants are infested. Preventive measures such as treating the seed with a mercury compound before planting may afford some protection. A 3-inch tarpaper disk (illustrated)—cut to the center so that it will fit snugly—if placed flat on the ground and fitted around each newly set plant, will afford protection. If maggots threaten the crop, a mercury treatment of calomel or corrosive sublimate may be applied to the soil around the plants. Maggot injury to newly planted beans, corn, and melon seed usually occurs during cool, wet periods when seed germination is slowed down. Prepare a good seedbed and plant shallow during warm periods to promote rapid germination of the seed.

Avoid breathing or getting into the mouth dusts containing mercury compounds; avoid storing them; and thoroughly clean all vessels used in mixing and handling poisonous compounds.

WIREWORMS (left) and **White Grubs** (right) feed on the roots of plants. These pests are very destructive to gardens in some areas. No means of control on the growing crop is known, as any soil treatment sufficient to kill the worms will injure the plants. Some benefits can be obtained by crushing all the pests that are seen when the soil is being worked. When wireworms or white grubs are abundant, the soil should be treated before the crop is planted. Crude naphthalene flakes, used at the rate of 1¼ pounds to 100 square feet, worked into the soil to give uniform distribution to a depth of about 10 inches, will give control. Good distribution can be had by spreading about half the material evenly over the soil just before spading or plowing and the other half immediately after, while the ground is still rough. The naphthalene should be worked into the soil promptly after it is applied. Do not plant until 7 days after treatment. To do so may injure the crop. Avoid planting carrots, onions, and other root crops on soil known to be infested.

PLANT LICE or Aphids are pests of peas, turnips, radishes, cabbages, cucumbers, and other vegetables. The leaves attacked sometimes curl up, enclosing the pests. Stems and the under side of leaves on which they feed often become covered with these tiny sucking insects, which sap the plant's life. Plants infested cannot develop normally or produce a crop. A nicotine sulfate and soap solution is a good remedy. Dissolve 2 teaspoonfuls of soap chips in 1 gallon of water and add 1½ teaspoonfuls of nicotine sulfate. Mix thoroughly, and spray to hit the lice. If a dust is to be used, a nicotine-dust mixture can be made by pouring 1 ounce of nicotine sulfate into a quart of lime in a half-gallon friction-top can. Add a few stones to help in mixing the material, place lid on container, and shake thoroughly for 10 minutes. Dust this mixture on the plant lice. Use nicotine when the air is calm and the temperature above 70° F. Remove the unused nicotine mixture from the sprayer or duster. Keep the dust mixture sealed in a tight container for later use.

Avoid breathing nicotine sulfate or getting it into the mouth.

PLANT-SUCKING BUGS feed on many vegetables. The Squash Bug (illustrated) feeds on vine crops, such as squash, pumpkin, and cucumbers. The Harlequin Bug feeds primarily on leafy crops, such as cabbage, kale, collards, and broccoli. The Green Stinkbug is a general feeder. These bugs are all larger then plant lice, and persistent effort through hand-picking of eggs and bugs will give much control. Cleaning up and destroying crop refuse after harvest will destroy many bugs that otherwise would attack crops the next year. Leafhoppers belong to another group of sucking plant bugs and are the small, usually pale green, very active insects that readily fly from the plant when they are disturbed. They damage beans and potatoes by sucking the juice from the plant and cause a disease called hopperburn. Applications of sulfur will give some protection. Potato growers use bordeaux mixture to control leafhoppers. Pyrethrum powder, if fresh, used alone or mixed with dusting sulfur, will give the best control of leafhoppers.

(See pyrethrum, under Insecticides, page 15.)

BEETLES chew holes in the leaves of plants such as beans, potatoes, eggplants, turnips, cucumbers, and melons. The Bean Beetle (illustrated) and the Potato Beetle in both the hard-shell and the young stage eat the plant leaves. Blister Beetles, Cucumber Beetles, and Flea Beetles, feed on the leaves of plants only when in the hard-shell (adult) stage. Flea beetles are small, dark insects, and move so rapidly they often pass unnoticed. They riddle the leaves of plants with small holes. Newly set plants such as tomatoes and eggplants, especially while wilted, are attractive to flea beetles. Eggplants and potatoes are subject to flea beetle attack at all times, whereas cabbage, kale, radish, and turnip seedlings are more susceptible to damage as they come through the ground. The small gardener can pick the larger beetles off the plants by hand and thus protect his crops. Rotenone or cryolite applied lightly but thoroughly to both the upper and lower surfaces of the leaves will afford protection from beetles. Cryolite can be used until the edible parts of plants begin to form (see caution on page 15).

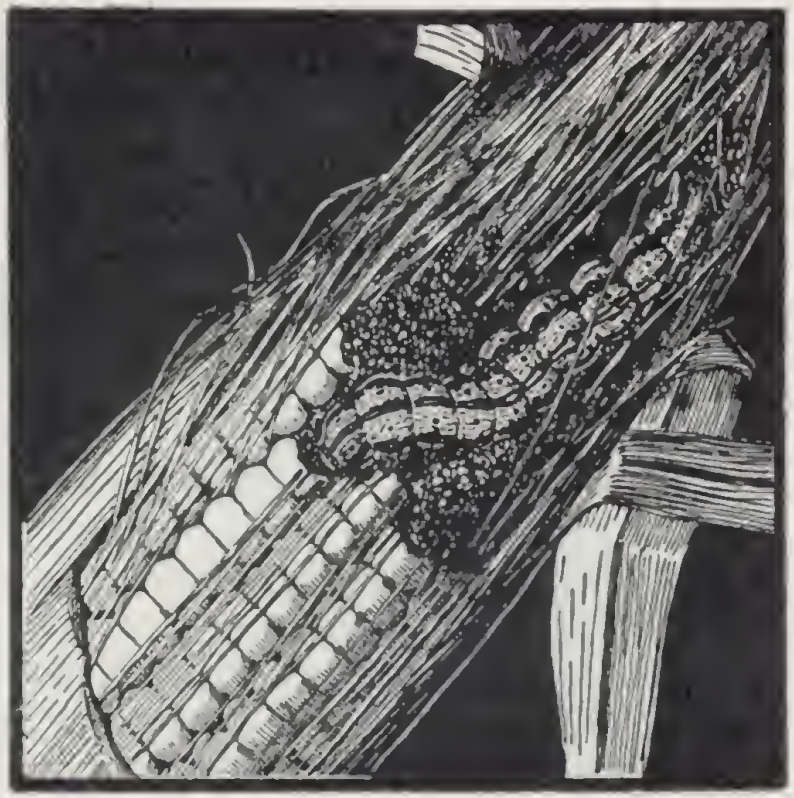
CATERPILLARS eat the leaves of garden plants, especially cabbage, kale, collards, cauliflower, and broccoli; also tomatoes. If these "worms" are not checked, they may ruin the crop. Pick off the pests by hand and destroy them. A mixture of cryolite, dusted or sprayed on plants at weekly intervals as long as necessary will control these insects. Care should be taken to cover both surfaces of the leaves. Cryolite should not be used on cabbage, cauliflower, or heading broccoli after the head begins to form, nor should it be used on any leafy vegetable intended for immediate consumption. If caterpillar control becomes necessary after heading or fruiting begins, dust crops such as cabbage with rotenone dust. Reach the innermost parts of the plants as well as both sides of the leaves. Rotenone is of little or no value for "worms" that feed on tomatoes. If treatment of tomatoes is necessay after plants have fruited, **use cryolite, but be sure to wipe or wash the fruit carefully before it is eaten or marketed.**

GRASSHOPPERS chew the leaves and fruits of practically all vegetables. In some areas they are destructive almost every year, in others they seldom cause damage. Grasshoppers can be controlled by the use of poison baits. In the Western and Great Plains States, where extensive grasshopper control programs are carried on, ready-mixed baits are available. Where ready-mixed baits cannot be procured, a bait can be prepared by mixing—

1 quart of wheat bran or rolled oats.
2 level teaspoonfuls of paris green.

When these dry materials are thoroughly mixed, add enough water slowly while mixing to make a crumbly mash in which every flake is moist and carries some poison. About 1 pint of water will be required. The bait should be scattered thinly over the ground. One quart of mixed bait is enough for one application to 2,000 square feet. Apply the bait in the morning when the temperature reaches 68° F. or higher. Since grasshoppers usually come from uncultivated areas outside the garden, these areas as well as the garden should be baited.

BORERS tunnel into the stems and roots of squash, pumpkins, cucumbers, melons, corn, and other plants. Some borers hatch from eggs laid on plants; others migrate from weeds in the garden. Therefore keep the weeds down. Squash borers (illustrated) tunnel into vines and cause them to wilt and die. Reduce damage by spraying plants four times, at weekly intervals, with a strong solution of 1 part nicotine to 100 parts of water, when the first blossoms appear. Borers can often be located in wilted vines by the yellow, waxy material near the point where they cut through the stem. Slit the stem at this point with a sharp knife, and crush or remove the borers. Immediately cover the stem with moist earth to prevent drying of the injured plant tissue. Water the vines frequently until new roots begin to form. Damage to corn by the European Corn Borer can be reduced by the application of rotenone spray or dust. Get the insecticide into the center of the plant where the tassel forms, and between each leaf and the stalk. Four applications 5 days apart, beginning about June 15, should be made on corn knee high or higher.



CORN EARWORM or Tomato Fruitworm (illustrated) feeds on tomato fruits and corn ears. The larger worms make holes about as big around as a lead pencil in the fruits. Enclosing fruit clusters in paper bags will offer some protection. Dusting the plants with cryolite when fruit begins to form also will help. Repeat applications every 10 days, or after each rain, as long as injury persists. Dusted tomato fruits should be washed thoroughly before they are eaten or marketed. Corn earworms once inside the ear cannot be controlled. Stop them with a medicinal mineral oil, or, preferably, a commercially prepared oil with another insecticide added to make it more effective. Place the oil in the silk about one-half inch inside the tip of the ear. About one-fourth of a teaspoonful, or 20 drops, to each ear can be applied with an eyedropper or an oilcan. Wait at least 3 days after the silks first appear at the tip of the ear before applying the oil. By that time the silks should be wilted and the tips beginning to turn brown. Earlier treatment will damage the ear, and later treatment may not give good control.

INSECTICIDES are the chemicals used to control insects. However, the home gardener cannot afford to stock all kinds. Only those necessary to give practical control of the most common insects are recommended in this guide. When in doubt about the mixture to use, follow directions on the package. Rotenone and pyrethrum are excellent garden insecticides, but the supply, especially of pyrethrum, is limited. These materials, if available, should be restricted to use on vegetables, at the time the edible parts are forming, for insects that cannot be controlled by other measures.

The following insecticides are poisonous to human beings as well as to insects. Caution should be taken in storing and handling them.

Cryolite gives good control for many chewing insects, and the national supply is expected to be adequate. Local supplies will depend on local dealers. Do not use cryolite on leafy vegetables, or on the exposed parts of vegetables such as tomato fruits, cabbage, cauliflower or broccoli heads, or on string (snap) beans.

Nicotine sulfate, used to control a number of insects, especially plant lice, is expected to be available in quantity sufficient to meet the demand by Victory gardeners. Nicotine dusts and sprays mixed for use must be kept sealed tightly, because they lose their strength rapidly. To give best results, nicotine dusts or sprays must be directed to hit the insects and used when the air is calm and warm.

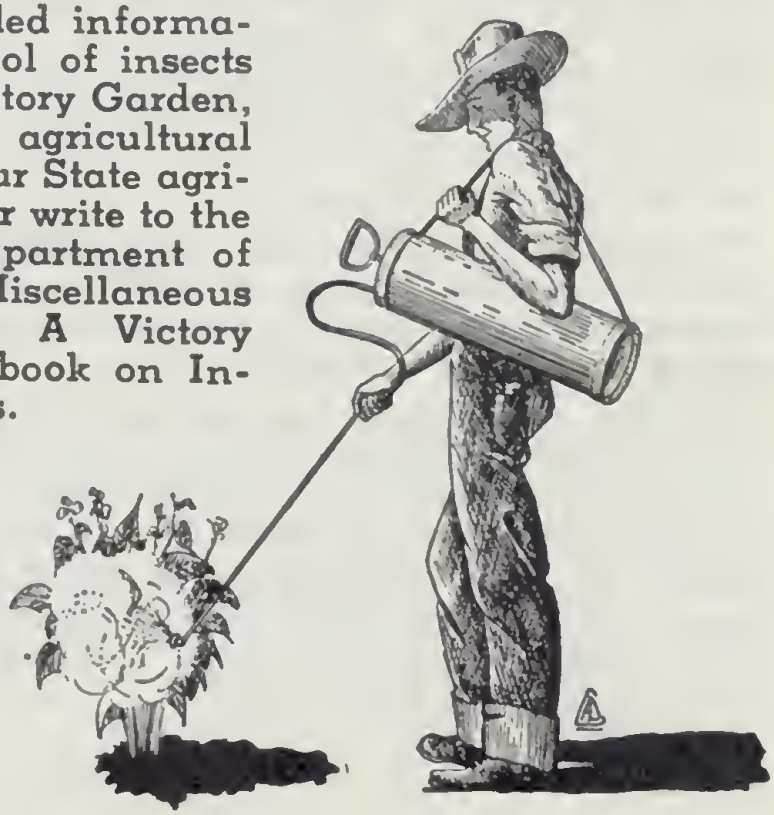
Arsenicals, such as calcium arsenate and paris green, are sometimes used to protect garden vegetables, but in some areas they cause injury to more tender plants. **Such insecticides should not be used on the edible part of the plant.**

Naphthalene has a limited use for controlling pests. Its principal use is against wireworms.

All mercuric compounds are poisonous, and mixtures containing copper sulfate, which is the principal element in bordeaux mixtures, are more or less poisonous to men and animals. In handling and mixing these, also be careful not to breathe them or get them into the mouth.

Dusters and sprayers are the equipment used to apply insecticides. The Victory gardener will have to depend on the kind of duster or sprayer available. Many of the metals formerly used to make such equipment have gone to war. Commercially prepared applicators will give best results. However, use of home-made devices such as shaker cans or sack dusters will offer some protection to garden plants.

For more detailed information on the control of insects affecting your Victory Garden, see your county agricultural agent, consult your State agricultural college, or write to the United States Department of Agriculture for Miscellaneous Publication 525, A Victory Gardener's Handbook on Insects and Diseases.



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